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DIRECTORATE OF
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Intelligence Memorandum

POSSIBLE ALTERNATIVES TO THE ROLLING THUNDER PROGRAM
(ALTERNATIVES 1, 2, AND 3)

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POSSIBLE ALTERNATIVES TO THE ROLLING THUNDER PROGRAM

(The case in which armed reconnaissance attacks are permitted against lines of communication and all fixed targets in North Vietnam except those targets previously unauthorized which are within 3 and 1.5 nautical miles of the centers of Hanoi and Haiphong, respectively). (No. 1)

(The case in which existing Rolling Thunder ground rules are modified to permit coastal and reconnaissance attacks against positively identified North Vietnamese attack craft and logistics craft outside of 3 nautical miles of the coast or coastal islands of North Vietnam). (No. 2)

(The case in which the Rolling Thunder program of March 1968 is modified to include attacks against military targets in populated areas with greater likelihood of higher civilian casualties and collateral damage). (No. 3)

CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
June 1968

INTELLIGENCE MEMORANDUM

Possible Alternatives
to the Rolling Thunder Program

The cases where the Rolling Thunder Program is reinstituted under March 1968 ground rules, modified as follows:

Reduction of the restricted bombing areas around Hanoi and Haiphong (No. 1)

Authorization of strikes against North Vietnamese attack and logistics craft outside the 3-mile limit (No. 2)

Authorization of strikes against military targets in populated areas (No. 3)

Summary

This memorandum examines the effects of a resumption of the Rolling Thunder Program under March 1968 ground rules, modified to permit strikes against previously unauthorized targets:

(a) all fixed targets except those within 3 and 1.5 nautical miles of the centers of Hanoi and Haiphong, respectively; or

(b) North Vietnamese attack and logistics craft outside the 3-mile limit; or

(c) any military target regardless of its location in populated areas.

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The effects of any of these alternative programs would not differ markedly from those achieved by a resumption of full-scale bombing under the March 1968 ground rules.* Although alternatives 1 and 3, particularly, would add to the cost of North Vietnam's continued support of the war, their effects would in all likelihood not be sufficient to alter the course of the war. Alternative 2 would present such few additional targets that it would have little, if any, impact on the war.

Under alternative 1 only one of 26 previously unstruck targets in the Haiphong area and 20 of 49 unstruck targets in the Hanoi area would be open to attack. Few of these are of prime importance to North Vietnam's war sustaining capabilities. Alternative 3 would expose a large number of significant targets to attack, including the port facilities at Haiphong and other major transport and industrial targets. The key military command facilities that could be attacked are believed to be in hardened sites. Attacks against barracks areas would have little disruptive effect, because the dispersal of large elements of the population means that adequate housing should be available.

The major effects of the loosening of the March 1968 restrictions on the bombing program would be as follows:

1. The initial strikes against storage areas in Hanoi and Haiphong might result in the destruction of 90,000 tons of supplies, or as much as 5 percent of one year's seaborne imports at present levels. After these initial strikes, however, these facilities would be dispersed and later strikes would be much less successful.

2. Transportation problems would be increased. The flow of imports through Haiphong would become more costly and time consuming. The loss of important repair facilities, particularly for railroad rolling stock, would create localized transportation problems. The heretofore largely undamaged machine building industry that contributes to the

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maintenance of transport equipment could be disrupted. The flow of men and supplies to the south, however, would be maintained. Supplies moving into South Vietnam were only a small fraction -- 2 percent -- of daily imports in 1967. The burden of any shortfall in imports would be carried by the civilian population.

3. Attacks against previously unstruck targets in urban areas would cause heavy collateral damage to civilian structures and inflict an estimated 1,000 to 3,000 civilian casualties.

4. The morale of the North Vietnamese people and leaders might deteriorate in the long run. No accurate measure can be made, however, of the amount of pressure that the regime can withstand or the price it is willing to pay before withdrawing support of the war in the South.

5. The attacks would be carried out at a high cost to US forces. Loss rates for attacks in the Hanoi and Haiphong areas during April 1967 through March 1968 were almost seven times as high as for operations over all of North Vietnam. In addition, large numbers of US personnel being held prisoner in compounds within urban areas would also be endangered.

6. The attacks against Hanoi and Haiphong would almost certainly cause the North Vietnamese to break off the Paris talks, unless the total war situation and the status of negotiations led Hanoi to believe that it was attaining success in undermining the Saigon government. Whatever the circumstances of the attacks, Hanoi would mount a vigorous propaganda campaign charging the United States with terror attacks against defenseless civilians. Despite what might be viewed as a justifiable action in the United States, a substantial segment of world opinion would

probably echo these charges or, at a minimum, be critical of the United States for escalating the bombing even beyond the original limits of the Rolling Thunder Program.

7. Extension of the attacks to include targets along the Chinese border would increase the chance of violation of Chinese air space and make US aircraft subject to attack by Communist Chinese aircraft and air defenses. The targets in the buffer zone are almost exclusively transportation targets. Their neutralization would be short-lived and would have only a minor impact on reducing the flow of imports.

The case in which armed reconnaissance attacks are permitted against lines of communication and all fixed targets previously unauthorized which are within 3 and 1.5 nautical miles of the centers of Hanoi and Haiphong, respectively. (No. 1)

1. Prior to the 31 March restrictions in the bombing of North Vietnam, the Rolling Thunder Program had strict ground rules controlling air attacks within 10 and 4 miles of Hanoi and Haiphong, respectively, and along the Chinese border, and imposed lesser controls over attacks within 30 miles of the center of Hanoi and within 10 miles of the center of Haiphong.* This section examines the effects of modifying -- in the event full-scale bombing is resumed -- the Rolling Thunder Program to permit armed reconnaissance attacks against all targets in North Vietnam except targets previously unauthorized that are within 3 and 1.5 nautical miles of Hanoi and Haiphong, respectively.

Airstrikes in the Reduced Hanoi Prohibited Zones

2. If the prohibited zone around Hanoi were reduced from a 10- to a 3-nautical-mile radius, 20 unstruck targets on the CINCPAC Rolling Thunder Target List (RTTL) in the Hanoi area would be subject to armed reconnaissance attacks. These 20 unstruck targets include the minor Van Dien and Phu Thi railroad sidings, three storage and supply depots, six dispersed POL sites, five barracks, a military training school, the transmitter and receiver facilities of the Hanoi international radio station, and the Hanoi chemical fertilizer plant

[redacted] In addition, 18 previously struck targets in the RTTL, including the railroad/high-way bridge and bypasses over the Canal des Rapides and the Yen Vien railroad yard would lie between the existing 10- and the proposed 3-mile prohibited zones and could be brought under more timely and frequent attack [redacted]

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3. The effect of unrestricted airstrikes on targets located between the 10- and 3-mile zones around Hanoi would be only slightly greater than that achieved during the 1967 bombing campaign. Attacks on the two unstruck rail sidings would have little significance. Sustained interdiction of the Canal des Rapides bridge and bypasses and of the untargeted rail bypasses to the Doumer Bridge would increase the need for the North Vietnamese to use time-consuming and more costly alternate routes and modes of transport. There are enough bypasses and alternatives, however, for goods to continue to move through the Hanoi area. Attacks on military barracks and training facilities could be disruptive, but most of the functions of these installations could be easily relocated. The neutralization of the international radio facilities would have no significant effect on war-related communications and could quickly be offset. The Hanoi chemical fertilizer plant produces nearly 10 percent of the country's phosphate fertilizer, but the loss of the plant's output could easily be made up by increased imports. Initial strikes in the area between the 10- and 3-mile zones would probably result in heavy destruction of the transport equipment, military goods, and economic supplies now using the area as a sanctuary. After the initial attacks, however, supplies and equipment would be quickly dispersed or moved into the reduced 3-mile sanctuary area with little loss of supply capabilities.

Attacks in the Haiphong Reduced Zone

4. The reduction of the prohibited zone around Haiphong from 4 to 1.5 nautical miles would have little or no impact on North Vietnam's support of the war. Only one unstruck target on the RTTL -- a transformer station -- would be subject to unlimited attack [redacted]. The transformer station connects the city of Haiphong into the main power network, but, if destroyed or damaged, it could be bypassed, and the city could function on local power from diesel-generating stations. Nine targets located between the existing 4-mile and the proposed 1.5-mile zones have already been struck, including the Haiphong Cat Bi Airfield, the Haiphong Highway Bridge SSE on Route 5,

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and some barracks and storage areas. Only two of these struck targets -- Cat Bi Airfield and the Haiphong Petroleum Products Storage Area -- remain as active targets on the RTTL. Unlimited attacks against these targets would have little impact beyond that achieved by previously authorized strikes [REDACTED]

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Attacks in the Buffer Zone

5. A large number of unstruck transportation targets are in the buffer zone along the Chinese border, including the important Dong Dang railroad yard, 10 other rail targets along the Hanoi-Dong Dang line, 16 rail bridges along the Hanoi-Lao Cai line, and about 300 highway bridges throughout the zone. Attacks against these targets, however, would hinder but not seriously impair transport operations. The most serious effect would result from attacks against the Dong Dang rail bridge and the rail yard that contains some railroad car repair facilities. Although the bridge and rail yard are the most important in the China border area, they can be effectively bypassed. The unstruck bridges on the Lao Cai line are small and can be quickly repaired or bypassed. Attacks against the many highway bridges in the buffer zone would hamper transport, particularly on Routes 1A, 1B, 3, and 4, but bypasses are sufficient to assure the continuation of traffic. Initial airstrikes in the existing sanctuary area along the Chinese border would result in a substantial destruction of supplies and transport equipment, but these items would probably soon be relocated across the Chinese border and supply movements would continue unabated.

Civilian Casualties

6. Air attacks against targets close to densely populated areas would probably result in a high number of North Vietnamese civilian casualties, although effective civil defense measures and an adequate warning system would tend to minimize casualties after the first few attacks. As many as 1,000 casualties might be inflicted in attacks against previously unstruck targets, based on the estimated 2,000 civilian casualties that resulted from strikes against a larger number of similar

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targets in 1967. These casualties would probably serve only to enhance the effectiveness of North Vietnamese propaganda, rather than to weaken the morale of the populace.

US Air Losses

7. An increase in air attacks against targets within 10 and 4 miles of Hanoi and Haiphong, respectively, would most likely result in a substantial increase in US aircraft losses. Forty-two US attack aircraft were lost in combat over Hanoi and Haiphong during April 1967 through March 1968, a loss rate of 16.6 per 1,000 attack sorties, compared with an overall loss rate of only 2.4 per 1,000 attack sorties. Moreover, increases in the number of attack sorties against targets in Hanoi and Haiphong have resulted in a greater than proportionate increase in the number of combat losses.

8. Aircraft hitting targets in the Chinese buffer zone might be subject to attack by Communist Chinese aircraft or AAA, if they straved across the border.

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The case in which existing Rolling Thunder ground rules are modified to permit coastal and reconnaissance attacks against positively identified North Vietnamese attack craft and logistics craft outside of 3 nautical miles of the coast or coastal islands of North Vietnam. (No. 2)

9. A modification of the Rolling Thunder Program as it existed in March 1968 to permit air attacks against North Vietnamese naval and logistics craft outside of 3 nautical miles of the North Vietnamese coast would have little impact on the war. Such attacks have been previously authorized throughout most of the Tonkin Gulf -- below 20° 42'N latitude -- but few lucrative targets have been available, and opening the upper reaches of the Gulf to air attack would make few new targets available.

Past Air Operations

10. The Rolling Thunder Program of March 1968 permitted armed reconnaissance air attacks against identified North Vietnamese naval and logistics craft in almost all areas of the Tonkin Gulf (see Figure 3). South of 20° 42'N latitude -- about 9 nautical miles south of the center of Haiphong -- all such craft could be attacked without limitation. North of this latitude to the buffer zone (25 nautical miles south of the Chinese border), armed reconnaissance was authorized against positively identified North Vietnamese craft sighted within 3 nautical miles of the coast and offshore islands of North Vietnam. North Vietnamese naval and logistics craft were free from attack only when they were outside of the 3-nautical-mile limit north of 20° 42'N (the upper reaches of the Tonkin Gulf) and then only if they did not fire on US aircraft.

11. Despite the sweeping authorization for attack, only a negligible share of the Rolling Thunder Program has been directed against watercraft in the Tonkin Gulf. Only 105 attack sorties were directed at offshore vessels in 1967, and most of these attacks were within 3 miles of the coast. These sorties delivered about 120 tons of ordnance -- 0.1 percent of the total delivered against all transportation targets in North

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Vietnam. Two PT-boats were sunk off Thanh Hoa in July 1967, and various watercraft were reported destroyed or damaged.

Potential Targets

12. Coastal junks and barges regularly move from the coal ports of Hon Gai and Cam Pha to Haiphong and further inland via coastal waterways. Coal is the principal commodity moved, but other economic goods are probably moved to the coal ports. These craft normally use the coastline for shelter and it is unlikely that they move outside of 3 nautical miles of the coast.

13. The small North Vietnamese Navy, which consists of about 40 Soviet and Chinese-built patrol boats, gunboats, torpedo boats, and subchasers, is often in the Haiphong and Hanoi areas to supplement the air defenses of the two cities. These craft seldom venture beyond Haiphong or the coastal islands east of Haiphong, however, and are rarely seen on the open seas in the areas now proposed for air attack.

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15. A few high-speed infiltration trawlers are suspected of transiting the upper Gulf en route to South Vietnam. These vessels presumably avoid running the length of the heavily patrolled North and South Vietnamese coasts by sailing through the Hainan Straits and down the eastern side of Hainan Island. Such voyages are probably infrequent; only one known attempt has been made to date in 1968 to approach the South Vietnamese coast from the direction of Hainan Island, and three of the four trawlers involved in the attempt

were sunk. Further, the run in the Tonkin Gulf could be made almost entirely within Chinese territorial waters if necessary.

16. Major fishing centers are located at Mon Cay near the Chinese border, at Haiphong, at Do Son, and off the island of Cac Ba. Fishing boats from these centers would probably be harassed by pilots searching for naval and logistics craft in the upper Gulf. Deep-sea fishing, however, is as yet relatively undeveloped in North Vietnam. The total annual fish catch before the bombing was only about 200,000 tons, of which about 110,000 tons were salt water fish and the remainder fresh water fish raised in the many ponds and irrigated fields in North Vietnam. Seventy percent of the salt water fish catch was obtained by fishing close to shore and only 30 percent was the result of deep-sea fishing. Deep-sea fishing in the area north of 20° 42'N latitude has already been adversely affected by the Rolling Thunder Program since most fishermen have had to pass through the 3-mile unrestricted zone.

The case in which the Rolling Thunder Program of March 1968 is modified to include attacks against military targets in populated areas with greater likelihood of higher civilian casualties and collateral damage. (No. 3)

17. A renewed bombing program that brought all military targets under attack without regard to population concentrations would add to the cost of North Vietnam's continued support of the war, but these attacks would not in themselves alter the course of the war. This alternative would open to attack 29 targets in Hanoi and 25 targets in Haiphong

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Transport Targets

18. In Hanoi, attacks against transport targets in populated areas that have not been subjected to airstrikes -- including the Hanoi railroad station and classification yard, Gia Lam Airfield, Areas B and F of the Hanoi port, a small boatyard, and six vehicle repair shops -- would not be excessively disruptive. The Hanoi railroad station and classification yard contains the country's largest locomotive and rail car repair facilities. Damage to this yard could hinder rolling stock repairs and disrupt rail traffic through Hanoi. Bypasses, however, probably would provide for the continued movement of goods. The nearest alternative for rebuilding locomotives would be in Communist China, but other facilities would be available for servicing and for light repairs. Areas B and F of Hanoi port employ primitive offloading methods and are relatively immune to neutralization. Gia Lam Airfield is North Vietnam's principal airfield for international passenger service, and attacks against the airfield would likely have adverse international political repercussions.

19. In Haiphong, air attacks against unstruck port targets -- the dock area, five shipyards, a rail yard, and a cable bridge -- could seriously hinder the movement of the large volume of imports that are vital to the economy and to the maintenance of lines of

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communication. [] The Haiphong dock area receives most of North Vietnam's seaborne imports. The destruction of the dock area would make it necessary to increase the use of lighters for offloading in the port area or to offload at Chinese ports and move the goods into North Vietnam by coastal craft, rail, and truck. Although less efficient, substantial amounts of seaborne imports could be unloaded by using lighters, and transport routes from China have considerable unused capacity.

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20. Five unstruck shipyards in Haiphong, together with the accidentally damaged Shipyard No. 4 and a naval base, provide an important part of the country's capacity for ship repairs. Watercraft could be serviced and repaired at dispersed locations, but major repairs to seagoing ships would be disrupted by strikes against Shipyard No. 4 and the naval base.

21. Haiphong's rail yard is one of the country's primary rail facilities, containing a car repair shop, engine house, and general repair facilities. Extensive damage to the rail yards would hinder rail clearance from the port, congest port operations, and reduce rolling stock repair capabilities. However, the impact on transport capacity would be far from decisive. Port operations and clearances of cargoes were maintained in 1967 although through rail traffic to the port areas was cut for an extended period by the interdiction of the Haiphong railroad/highway bridge.

Storage Facilities

22. The denial of sanctuary for storage of goods in urban populated areas would hinder present logistical procedures and would require the initiation of alternate methods for storage and distribution. Five unstruck storage and supply depots are in the Hanoi area; in Haiphong, there are six major unstruck storage facilities including warehouses and open storage in the port. Initial attacks on storage areas could render heavy damage to accumulated imported goods. An estimated 30,000 to 40,000 tons of goods could be stored in the Hanoi port area, and the

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Haiphong port at any one time might contain as much as 50,000 tons of miscellaneous cargo including motor vehicle tires, barge sections, trucks, jeeps, construction materials, and POL drums.

Military Targets

23. Attacks against barracks areas and headquarters compounds would have little disruptive effect. Key command facilities are believed to be in hardened sites. The elimination of barracks would place an added burden on available civilian housing, but with the evacuation of large numbers of young and old from Hanoi and Haiphong, housing should be more than adequate for those air defense and military units remaining in the cities.

Targets in Industry

24. The most important unstruck industrial installations in populated areas are the machine building plants. The Hanoi machine tool engineering equipment plant, the Hanoi engineering plant, and the Hanoi machinery plant are the largest and most productive of North Vietnam's small machine building industry. Their output probably contributes significantly to the maintenance of transport equipment. Successful strikes against these plants would eliminate a large share of the country's output of diesel motors, small electric motors, generators, water pumps, and machinery spare parts, adding significantly to import requirements. Attacks against these facilities might lead to further dispersal of an already decentralized industry with the consequent inefficiencies.

25. Other unstruck industrial facilities in populated areas contribute products that support the home front or are not essential to the war effort. In Hanoi, a rubber products plant produces consumer goods and a concrete products plant produces civil defense shelters, among other products. In Haiphong, a concrete products plant, three POL tank fabrication shops, and four diesel powerplants are relatively unimportant targets.

Casualties and Collateral Damage

26. Air attacks against previously unstruck targets in densely populated areas would result in a higher number of North Vietnamese civilian casualties, although

effective civil defense measures and an adequate warning system would tend to minimize casualties after the first few attacks. The number of civilian casualties inflicted on these strikes might be as high as 3,000, based on the estimated 2,000 casualties inflicted by less intensive strikes against targets in populated areas in 1967. This level of casualties might increase the effectiveness of North Vietnamese propaganda.

27. In addition to civilian casualties, collateral damage to civilian structures would be increased. Damage to residential housing and public buildings in Hanoi and Haiphong has been light thus far, although in Nam Dinh, the third largest city in North Vietnam, collateral damage has been particularly heavy. Although casualties have been played down, collateral damage has figured prominently in Hanoi's propaganda.

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